catalyst state estimation means for estimating a state of said catalyst at a time at which said index means has obtained the index value, as to a physical quantity which affects a catalytic action of said catalyst;

correction means for correcting said index value obtained by said index means, to a value in a standard state of said catalyst previously set as to the physical quantity, by the use of the estimated result of said catalyst state estimation means; and

decision means endowed with a preset criterion value, and for deciding said deterioration state of said catalyst by comparing the index value corrected by said correction means, with the criterion value, wherein:

said catalyst serves to eliminate noxious substances which are contained in exhaust gas of an engine; and

said catalyst state estimation means includes

operating-situation detection means for detecting a value of that state variable of the engine which correlates with said physical quantity;

memory means for storing therein correspondence information which indicate correlations between values of the state variable and those of said physical quantity; and

arithmetic means for determining a value of said physical quantity by referring to the correspondence information on the basis of the detected result of said operating-situation detection means.

7. (Amended) A catalyst-deterioration diagnostic system for diagnosing a deterioration state of a catalyst, comprising:

index means for obtaining a value of an index which is used for deciding the deterioration state of the catalyst;

decision means endowed with a preset criterion value, and for deciding said deterioration state of said catalyst by comparing the index value obtained by said index means, with the criterion value;

catalyst state estimation means for estimating a state of said catalyst at a time at which said index means has obtained said index value, as to a physical quantity which affects a catalytic action of said catalyst; and

suspension means endowed with a predetermined range concerning the physical quantity, and for causing said decision means to suspend the decision on condition that a value of said physical quantity obtained by said catalyst state estimation means is outside the predetermined range, wherein:

said catalyst serves to eliminate noxious substances which are contained in exhaust gas of an engine; and

said catalyst state estimation means includes

operating-situation detection means for detecting a value of that state variable of the engine which correlates with said physical quantity;

memory means for storing therein correspondence information which indicate correlations between values of the state variable and those of said physical quantity; and

arithmetic means for determining a value of said physical quantity by referring to the correspondence information on the basis of the detected result of said operating-situation detection means.

Add the following claims:

17. (New) A diagnostic system for diagnosing a deterioration state of a catalyst in an engine, comprising:

a memory for storing a preset criterion value and a predetermined range for a state variable of the engine that correlates with a physical quantity affecting a catalytic action of the catalyst; and

a processor connected to the memory for obtaining an index value indicative of a conversion efficiency of the catalyst; receiving a value of the state variable of the engine; suspending a determination of the deterioration state of the catalyst if the value of the state variable is outside the predetermined range; and determining the deterioration state of the catalyst by comparing the index value with the preset criterion value if the value of the state variable is within the predetermined range.

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- 18. (New) The diagnostic system of claim 17, wherein the physical quantity is a temperature of the catalyst and the state variable is selected from the group consisting of a quantity of intake air, a quantity of fuel injection, and a revolutions-per-minute of the engine.
- 19. (New) The diagnostic system of claim 17, wherein the preset criterion value represents a limit of deterioration calling for replacement of the catalyst.

20. (New) A diagnostic system for diagnosing a deterioration state of a catalyst in an engine, comprising:

a memory for storing a preset criterion value; and

a processor connected to the memory for obtaining an index value indicative of a conversion efficiency of the catalyst; receiving a value of a state variable of the engine that correlates with a physical quantity affecting a catalytic action of the catalyst; modifying the index value to a value in a standard state of the catalyst previously set as to the physical quantity using the value of the state variable; and determining the deterioration state of the catalyst by comparing the modified index value with the preset criterion value.

- 21. (New) The diagnostic system of claim 20, wherein the physical quantity is a temperature of the catalyst and the state variable is selected from the group consisting of a quantity of intake air, a quantity of fuel injection, and a revolutions-per-minute of the engine.
- 22. (New) The diagnostic system of claim 20, wherein the preset criterion value represents a limit of deterioration calling for replacement of the catalyst.
- 23. (New) A method of diagnosing a deterioration state of a catalyst in an engine, comprising:

- (a) storing a preset criterion value and a predetermined range for a state variable of the engine that correlates with a physical quantity affecting a catalytic action of the catalyst;
- (b) obtaining an index value indicative of a conversion efficiency of the catalyst;
 - (c) detecting a value of the state variable of the engine;
- (d) suspending a determination of the deterioration state of the catalyst if the value of the state variable is outside the predetermined range; and
- (e) determining the deterioration state of the catalyst by comparing the index value with the preset criterion value if the value of the state variable is within the predetermined range.
- 24. (New) The method of claim 23, wherein the physical quantity is a temperature of the catalyst and the state variable is selected from the group consisting of a quantity of intake air, a quantity of fuel injection, and a revolutions-per-minute of the engine.
- 25. (New) The method of claim 23, wherein the present criterion value represents a limit of deterioration calling for replacement of the catalyst.
- 26. (New) A method of diagnosing a deterioration state of a catalyst in an engine, comprising:
 - (a) storing a preset criterion value;

- (b) obtaining an index value indicative of a conversion efficiency of the catalyst;
- (c) detecting a value of a state variable of the engine that correlates with a physical quantity affecting a catalytic action of the catalyst;
- (d) modifying the index value to a value in a standard state of the catalyst previously set as to the physical quantity using the value of the state variable; and
- (e) determining the deterioration state of the catalyst by comparing the modified index value with the preset criterion value.

(New) The method of claim 26, wherein the physical quantity is a temperature of the catalyst and the state variable is selected from the group

temperature of the catalyst and the state variable is selected from the group consisting of a quantity of intake air, a quantity of fuel injection, and a

revolutions per minute of the engine.

28. (New) The method of claim 26, wherein the present criterion value represents a limit of deterioration calling for replacement of the catalyst.

REMARKS

In view of the above amendments, obvious-type double patenting rejections of Claims 4, of Claims 4, 5, 8, 9 and 12, and of Claim 5 over certain claims of U.S. Patent Nos. 5,526,643 and 6,343,466, as well as the rejection of Claims 4, 5 and 8-16 under 35 USC § 101, are traversed and, in any event, are moot. Reconsideration of these rejections is requested, particularly as the above